

## Summary of Cancer Incidence and Mortality for Zip Code 29223 (Columbia, SC)

### ***Cancer Incidence in Zip Code 29223***

The first step in the analysis of cancer data for zip code 29223 was to look at the number of new cancer cases diagnosed in the zip code and compare this to the number of cancer cases expected (see Table 1). This first step determines if there is anything unusual with cancer patterns in the area. The number of "expected" cancer cases is calculated by using South Carolina cancer rates and applying them to the population of the zip code.

Table 1 shows what types of cancer occurred in zip code 29223 from 1996-1999, and how many cancer cases were expected. Overall, there were fewer new cases of cancer than expected. A total of 663 new cases of cancer occurred in the zip code, while 720 cases were expected. The most common types of cancer were female breast, prostate, lung and colorectal cancers. These four types of cancer are also the most common cancers occurring across all of South Carolina.

The analysis revealed one type of cancer (**liver**) where the number of new cases occurring was significantly higher than expected. A total of 10 liver cancers were diagnosed while 5 were expected.

There are several risk factors that increase a person's risk for developing liver cancer. Chronic infection with Hepatitis B or C can increase the risk of developing liver cancer. Also, a history of liver cirrhosis increases risk. Occupational exposure to vinyl chloride also has been shown to increase liver cancer risk<sup>1</sup>.

### ***Cancer Deaths in Zip Code 29223***

To assess cancer deaths in this zip code, cancer mortality data from 1996-2000 were used. This is the most current death data available. The same process used to analyze new cancer cases was also used to analyze cancer deaths. Table 2 shows the number of cancer deaths that occurred and the number expected in the zip code. A total of 369 cancer deaths occurred in this zip code, while 404 deaths were expected. Therefore, fewer cancer deaths occurred than expected.

The analysis revealed two specific types of cancer (**leukemia and multiple myeloma**) where the number of deaths occurring was significantly higher than expected. A total of 23 leukemia deaths occurred while 14 were expected. A total of 16 multiple myeloma deaths occurred while 9 were expected.

There are four main types of leukemia, and each has a totally different set of risk factors associated with it. Chronic lymphocytic (CLL) and chronic myelocytic leukemias (CML) occur most often in adults. The only known inherited risk factor for chronic leukemia is having first degree relatives who have had CLL. Long term contact with herbicides and pesticides among farmers can increase their risk of CLL.

Acute lymphocytic leukemia (ALL) occurs most often in children. Acute myelocytic leukemia (AML) occurs mostly in adults. Smoking is a proven risk factor for AML. About 1/5 of AML cases are caused by smoking. Also, scientists have discovered that people exposed to benzene or to large amounts of radiation (such as in people receiving treatment for other cancers) have an increased risk of ALL and AML.

Scientists have found few risk factors that make a person more likely to develop multiple myeloma. Age is the most significant risk factor. Only 2% of cases are diagnosed in people under the age of 40. The average age at diagnosis is 70 years of age. Multiple Myeloma is almost twice as common in African-Americans as white Americans. The reason for this disparity is not known. Some studies have suggested that workers in certain petroleum-related industries may be at a higher risk as well.

### ***Conclusions***

To summarize, fewer cancer cases and cancer deaths occurred in zip code 29223 than expected. Looking at specific types of cancer, we see that there were more liver cancer cases than expected. Also, more leukemia and multiple myeloma deaths occurred than expected.

In order for a true cancer cluster to exist, the number of cancers occurring must be more than would be expected by chance. Along with statistical testing, there are several other criteria that determine whether a true cancer cluster exists. First, a cancer cluster would more likely involve rarer types of cancer, like brain, rather than more common cancers, like lung or prostate. Also, a cancer cluster would occur with one specific type of cancer rather than having excesses in several different types of cancer.

Taking all these criteria into consideration, there is no evidence of cancer clustering or of cancers resulting from environmental exposures in zip code 29223.

For questions about this report, please contact Laura Sanders at the SC Central Cancer Registry.

***Report provided by:***

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***References***

1. American Cancer Society, 2001. [www.cancer.org](http://www.cancer.org)

Information on cancer incidence provided by the SC Central Cancer Registry, Office of Public Health Statistics and Information Services, SC Dept. of Health and Environmental Control.

Information on cancer mortality provided by the Division of Vital Records and the Division of Biostatistics, SC Dept. of Health and Environmental Control.

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**Table 1. Analysis of New Cancer Cases in Zip Code 29223, 1996-1999**

<b><u>Cancer Site</u></b>	<b><u>Observed No. of Cases</u></b>	<b><u>Expected No. of Cases</u></b>	<b><u>Observed/Expected</u></b>	<b><u>Chi-SquareTest*</u></b>
Breast (Female)	103	115.0	0.90	1.25
Prostate	101	113.0	0.89	1.28
Lung/Bronchus	99	111.7	0.89	1.44
Colon/Rectum	67	80.5	0.83	2.27
Non-Hodgkin's Lymphoma	23	23.6	0.97	0.01
Uterus	21	18.1	1.16	0.47
Bladder	19	27.0	0.70	2.35
Kidney/Renal Pelvis	19	18.5	1.02	0.01
Leukemia	19	13.8	1.38	1.99
Melanoma	19	26.4	0.72	2.09
Oral/Pharynx	19	21.6	0.88	0.31
Pancreas	14	15.5	0.90	0.15
Multiple Myeloma	13	7.9	1.66	3.38
Ovary	13	12.5	1.04	0.02
Thyroid	13	8.4	1.54	2.46
<b>Liver</b>	<b>10</b>	<b>5.0</b>	<b>1.99</b>	<b>4.94</b>
Brain/CNS	9	10.2	0.88	0.15
Larynx	8	9.2	0.87	0.16
Cervix	7	11.6	0.61	1.80
Stomach	7	11.0	0.64	1.46
Esophagus	3	10.1	0.30	4.96
All Sites	663	719.8	0.92	4.48

Excludes in situ cases of cancer to allow for comparison.

Excludes cancer sites with less than 5 cases of cancer expected due to the unreliability of statistical tests based on small numbers.

\*The Chi-Square statistical test allows us to determine if the difference between what is observed and what is expected is significant. If the value is greater than 3.84, then we are 95% confident that the observed number of cases is significantly different from the expected number of cases.

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**Table 2. Analysis of Cancer Deaths in Zip Code 29223, 1996-2000**

<b><u>Cancer Site</u></b>	<b><u>Observed No. of Deaths</u></b>	<b><u>Expected No. of Deaths</u></b>	<b><u>Observed/Expected</u></b>	<b><u>Chi-SquareTest*</u></b>
Lung/Bronchus	107	119.5	0.90	1.30
Colon/Rectum	39	39.3	0.99	0.00
Breast (Female)	26	32.1	0.81	1.17
<b>Leukemia</b>	<b>23</b>	<b>13.9</b>	<b>1.65</b>	<b>5.93</b>
Pancreas	19	21.9	0.87	0.39
<b>Multiple Myleoma</b>	<b>16</b>	<b>9.0</b>	<b>1.78</b>	<b>5.48</b>
Prostate	16	23.8	0.67	2.56
Brain/CNS	15	11.0	1.37	1.49
Liver	10	7.7	1.29	0.66
Ovary	10	9.4	1.06	0.03
Non-Hodgkin's Lymphoma	9	14.4	0.62	2.05
Oral/Pharynx	7	8.2	0.86	0.17
Esophagus	6	10.4	0.58	1.85
Kidney/Renal Pelvis	6	8.4	0.72	0.66
Stomach	5	10.2	0.49	2.66
Bladder	4	7.1	0.56	1.36
All Sites	369	404.2	0.91	3.06

Excludes cancer sites with less than 5 cancer deaths expected due to the unreliability of statistical tests based on small numbers.

\*The Chi-Square statistical test allows us to determine if the difference between what is observed and what is expected is significant. If the value is greater than 3.84, then we are 95% confident that the observed number of deaths is significantly different from the expected number of deaths.

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